federal register

Thursday
January 3, 1980

Part III

Environmental Protection Agency

Ink Formulating— Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 447

[FRL 1309-4]

Ink Formulating—Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed regulation.

SUMMARY: EPA proposes a regulation to eliminate effluent discharges to waters of the United States and introductions of pollutants into publicly owned treatment works from facilities engaged in manufacturing ink. The purpose of this proposal is to provide effluent limitations guidelines for "best available technology," and to establish new source performance standards and pretreatment standards, under the Clean Water Act. After considering comments received in response to this proposal, EPA will promulgate a final rule.

The Supplementary Information section of this preamble describes the legal authority and background, the technical and economic bases, and other aspects of the proposed regulations. That section also summarizes comments on a draft technical document circulated on January 29, 1979, and solicits comments on specific areas of interest. The abbreviations, acronyms, and other terms used in the Supplementary Information section are defined in Appendix A to this notice.

These proposed regulations are supported by three major documents available from EPA. Analytical methods are discussed in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants.* EPA's technical conclusions are detailed in the *Development Document for Proposed Effluent Limitations Guidelines, New Source Performance Standards and Pretreatment Standards for the Ink Formulation Point Source Category.* The Agency's economic analysis is found in *Economic Analysis of Proposed Effluent Standards and Limitations for the Ink Manufacturing Industry.*

DATES: Comments on this proposal must be submitted on or before March 3, 1980.

ADDRESS: Send comments to: Mr. James R. Berlow, Effluent Guidelines Division (WH-552), Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460, Attention: Docket Clerk, Ink. The supporting information and all comments on this proposal will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2404 (Rear) PM-213, (EPA Library). The EPA information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Technical information and copies of technical documents may be obtained from Mr. James R. Berlow, at the address listed above, or call (202) 426-2554. The economic analysis may be obtained from Mr. John Kukulka, Water Economics Branch (WH-586), Environmental Protection Agency, 401 M St. S.W., Washington, D.C. 20460, or call (202) 426-7733.

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I. Legal Authority

EPA is proposing this regulation under authority of Sections 301, 304, 306, 307, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1251 *et seq.*, as amended by the Clean Water Act of 1977, P.L. 95-217) (the "Act"). This regulation also is proposed in response to the Settlement Agreement in *Natural Resources Defense Council, Inc. v. Train,* 8 ERC 2120 (D.D.C. 1976), modified, 12 ERC 1833 (D.D.C. 1979).

II. Background

A. The Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972 established a comprehensive program to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 101(a). By July 1, 1977, the Act required existing industrial dischargers to achieve "effluent limitations requiring the application of the best practicable control technology currently available" (BPT), Section 301(b)(1)(A); and by July 1, 1983, these dischargers were required to achieve "effluent limitations requiring the application of the best available technology economically achievable . . . which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants" (BAT), Section 301(b)(2)(A). New industrial direct dischargers were required to comply with Section 306 new source performance standards (NSPS), based on best available demonstrated technology; new and existing dischargers to publicly owned treatment works (POTW) were subject to pretreatment standards under Sections 307 (b) and (c) of the Act. While the requirements for direct dischargers were to be incorporated into National Pollutant Discharge Elimination System (NPDES) permits issued under Section 402 of the Act, pretreatment standards were made enforceable directly against dischargers to POTW (indirect dischargers).

Although section 402(a)(1) of the 1972 Act authorized the setting of requirements for direct dischargers on a case-by-case basis, Congress intended for the most part that control requirements would be based on regulations promulgated by the Administrator of EPA. Section 304(b) of the Act required the Administrator to promulgate regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of BPT and BAT. Sections 304(c) and 306 of the Act required promulgation of regulations for NSPS, and Sections 304(f), 307(b), and 307(c) required promulgation of regulations for pretreatment standards. In addition to these regulations for designated industry categories, Section 307(a) of the Act required the Administrator to promulgate effluent standards applicable to all dischargers of toxic pollutants. Finally, Section 501(a) of the

Act authorized the Administrator to prescribe any additional regulations "necessary to carry out his functions" under the Act.

EPA was unable to promulgate many of these regulations by the dates specified by the Act, and in 1976, was sued by several environmental groups. In settlement of this lawsuit EPA and the plaintiffs executed a "Settlement Agreement," which was approved by the Court. This Agreement required EPA to develop a program and adhere to a schedule for promulgating for 21 major industries BAT effluent limitations guidelines, pretreatment standards, and new source performance standards for 65 "priority" pollutants and classes of pollutants. See *Natural Resources Defense Council, Inc.* v. *Train,* 8 ERC 2120 (D.D.C. 1976), modified, 12 ERC 1833 (D.D.C. 1979).

On December 27, 1977, the President signed into law the Clean Water Act of 1977. Although this law makes several important changes in the federal water pollution control program, its most significant feature is its incorporation into the Act of several of the basic elements of the Settlement Agreement program for toxic pollution control. Sections 301(b)(2)(A) and 301(b)(2)(C) of the Act now require the achievement by July 1, 1984, of effluent limitations requiring application of BAT for "toxic" pollutants, including the 65 "priority" pollutants and classes of pollutants which Congress declared "toxic" under Section 307(a) of the Act. Likewise, EPA's standards for new sources and pretreaters aim primarily at control of toxic pollutants. Moreover, to strengthen the toxics control program, Section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" (BMPs) to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the manufacturing or treatment process.

In keeping with its emphasis on toxic pollutants, the Clean Water Act of 1977 also revises the control program for non-toxic pollutants. Instead of BAT for the "conventional" pollutants identified under Section 304(a)(4) (including biochemical oxygen demand, suspended solids, fecal coliform and pH), the new Section 301(b)(2)(E) requires achievement by July 1, 1984, of "effluent limitations requiring the application of the best conventional pollutant control technology"(BCT). The factors considered in assessing BCT for an industry include the costs of attaining a reduction in effluents and the effluent reduction benefits derived compared to the costs and effluent reduction benefits from the discharge of publicly owned treatment works (Section 304(b)(4)(B)). For nonconventional pollutants, Section 301(b)(2(A) and (b)(2)(F) require achievement of BAT effluent limitations within three years after their establishment or July 1, 1984, whichever is later, but not later than July 1, 1987.

The purpose of these proposed regulations is to provide effluent limitations guidelines for BAT, and to establish NSPS, pretreatment standards for existing sources (PSES), and pretreatment standards for new sources (PSNS) in the ink formulation industry, under Sections 301, 304, 306, 307, and 501 of the Clean Water Act.

B. Prior EPA Regulations

EPA promulgated BPT, BAT, NSPS, and PSNS for the Oil-Base Solvent-Wash Subcategory of the Ink Formulating Point Source Category on July 28, 1975, (40 FR 31724; 40 CFR Part 446, Subpart A). These regulations, which required no dishcarge of process wastewater pollutants, were not challenged and are currently in effect. For the purpose of clarifying the coverage of this subcategory, EPA is retitling this subcategory the Solvent-Wash Subcategory. This does not change the substance or applicability of the regulations.

The regulations proposed in this notice include PSES for Subpart A (renamed the Solvent-Wash Subcategory). Additionally, this proposal includes BAT, NSPS, PSES, and PSNS for Subpart B, the Caustic or Water-Wash Subcategory, which was not covered by prior regulations.

C. Overview of the Industry

The ink formulation industry is included within the U.S. Department of Commerce, Bureau of the Census Standard Industrial Classification (SIC) 2893. The variety of inks used today is broad, ranging from ordinary writing inks to specialized magnetic inks. A large volume of inks is specially produced for the printing industry. These inks fall into four major categories: letterpress inks, lithographic inks, flexographic inks, and gravure inks.

Letterpress inks are viscous tacky pastes using oil and varnish based vehicles. They generally contain resins and they dry by the oxidation of the vehicle.

Lithographic of off-set inks are viscous inks with a varnish based vehicle, similar to the letterpress varnishes. The pigment content is higher than that of letterpress ink because it is applied in thinner films. These inks are formulated to run in the presence of water because water is used to create the non-image areas of the printing plate.

Flexographic inks are liquid inks which dry by evaporation, absorption into the substrate, and decomposition. The two main types of flexographic inks are water and solvent. Water inks are used on absorbent paper and solvent inks are used on nonabsorbent surfaces.

Gravure inks are liquid inks which dry by solvent evaporation. These inks have a variety of uses ranging from publications printing to food package printing.

In the manufacture of inks, the three major ingredients (vehicles, pigments and dryers) are mixed together to form an even dispersion of pigments within the vehicle. The pigments, vehicles and additives are combined in calculated amounts into a mixing tub, and then blended in commonly used high-speed vertical post mixers.

Most inks are made in a batch process in tubs ranging in size from 19 liters (five gallons) to over 3750 liters (1,000 gallons). The number of manufacturing steps depends on the dispersion characteristics of the ingredients. Most inks need only one or two production steps because many pigments come predispersed in a paste or wetted form.

Many inks need further milling operations to meet formulation specifications. A batch of ink many go through the mills several times before the required dispersion is reached.

Process wastewater from ink manufacturing plants results primarily from the rinsing of mixing tubs, roller mills, and other equipment. Some additional wastewater may come from floor and spill cleaning, laboratory and plant sinks, boiler and cooling water blowdown, air pollution control devices using water, and cleanout of raw material supply tank cars or trucks.

Mixing tubs can be cleaned by water rinses, caustic or solvent rinses, dry methods, or some combination of methods. Water rinses usually follow water-base ink batches, while solvent rinsing is used after solvent or oil-base ink batches; caustic rinsing may be used for either. Many plants routinely use caustic rinsing for small protable tubs, and clean fixed tubs with caustic only when a heavy build-up of ink residue makes it necessary. The caustic-wash generally is recycled and followed by a water rinse.

Wastewaters generated by this industry contain high average concentrations of BOD5 (19,800 mg/l), TSS (1,000 mg/l), and oil and grease (620

mg/l), as well as high average concentrations of the following toxic pollutants (based only on samples where detected): Chromium, 35 mg/l; Copper, 17 mg/l; Lead, 151 mg/l; Zinc, 4 mg/l; 1,1,1-Trichloroethane, 560 μg/l; 1,2-Diphenylhydrazine, 3,800 μg/l; Ethylbenzene, 4,200 μg/l; Methylene Chloride, 950 μg/l; Isophorone, 44,000 μg/l; Pentachlorophenol, 660 μg/l; Di(2-ethylhexyl) Phthalate, 12,500 μg/l; Di-n-octyl Phthalate, 3,600 μg/l; Tetrachloroethylene, 1,250 μg/l; Toluene, 1,600 μg/l; Trichloroethylene, 1,800 μg/l.

EPA estimates that there are 460 ink plants in the United States, clustered primarily around large population centers. California, New Jersey, New York, Illinois, and Ohio contain the most ink operations, and taken together represent about 42% of all ink manufacturers. Nearly 28% of the industry consists of single location manufacturing companies. About 42% of the plants are publicly held, and the remainder fall under other forms of organization. Approximately 42 percent of all ink companies employ ten employees or less.

III. Scope of This Rulemaking and Summary of Methodology

These proposed regulations open a new chapter in water pollution control requirements for the ink manufacturing industry. EPA's 1973–1976 round of rulemakings emphasized the achievement of best practicable technology (BPT) by July 1, 1977. In general, this technology level represented the average of the best existing performances of well known technologies for control of familiar (i.e., "classical") pollutants.

This round of rulemaking, in contrast, directs EPA's efforts toward insuring the achievement by July 1, 1984, of the best available technology economically achievable (BAT), which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. At a minimum, this technology level represents the very best economically achievable performance in any industrial category or subcategory. Moreover, as a result of the Clean Water Act of 1977, the emphasis of EPA's program has shifted from "classical" pollutants to the control of a lengthy list of toxic substances.

In the 1977 legislation, Congress recognized that it was dealing with areas of scientific uncertainty when it declared the 65 "priority" pollutants and classes of pollutants "toxic" under Section 307(a) of the Act. Except for the metals and a small number of organic compounds, the "priority" pollutants have been relatively unknown outside of the scientific community, and those engaged in wastewater sampling and control have had little experience dealing with these pollutants.

Additionally, these pollutants, primarily the organic pollutants, often appear and have toxic effects at concentrations which severely tax current analytical techniques. Even though Congress was aware of the state-of-the-art difficulties and expense of "toxics" control and detection, it directed EPA to act quickly and decisively to detect, measure, and regulate these substances.

The lack of established analytical methods forced EPA and its consultants to develop new techniques for organic toxic pollutant detection and measurement. These are discussed under Sampling and Analytical Program. EPA then gathered the technical and financial data about the industry summarized under Data Gathering Efforts. This information enabled the Agency to develop these proposed regulations.

EPA first studied the ink formulation industry to determine whether differences in raw materials, final products, manufacturing processes, equipment, age and size of plants, water usage, wastewater constituents, or other factors required the development of separate effluent limitations and standards for different segments of the industry. This study included the identification of raw waste and treated effluent characteristics, including: 1) the sources and volume of water used, the processes employed, and the sources of pollutants and wastewaters in the plant, and 2) the constituents of wastewaters, including toxic pollutants. EPA then identified the constituents of wastewaters which should be considered for effluent limitations guidelines and standards of performance, and statistically analyzed raw waste constituents. This is discussed in detail in Section V of the Development Document.

The Agency next identified several distinct control and treatment technologies which are either in use, or have the potential for use, in the ink formulation industry. The Agency compiled and analyzed historical data and newly generated data on the effluent quality obtained by application of these technologies. The long term performance, operational limitations, and reliability of each of the treatment and control technologies also were identified. In addition, EPA considered the nonwater quality environmental impacts of these technologies, including impacts on air quality, solid waste generation, and energy requirements.

The Agency then estimated the costs of each control and treatment technology from unit costs developed by standard engineering analysis as applied to ink formulation wastewater characteristics. EPA derived unit process costs from model plant characteristics (production and flow) applied to each treatment process unit cost curve (i.e., precipitation and settling recycle, etc.). These unit process costs were added together to yield total cost at each treatment level. After confirming the soundness of this methodology, the Agency evaluated the economic impacts of these costs. (Costs and economic impacts are discussed in detail under the various technology options, and in the section of this notice entitled Costs, Effluent Reduction Benefits, and Economic Impacts).

Upon consideration of these factors, as more fully described below, EPA identified various control and treatment technologies as BAT, PSES, PSNS, and NSPS. The proposed regulations, however, do not require the installation of any particular technology. Rather, they require achievement of effluent limitations representative of the proper operation of these technologies or equivalent technologies. As discussed below, this notice proposes no discharge of process wastewater pollutants.

IV. Data Gathering Efforts

The data gathering program is described in detail in Section III of the Development Document. Before beginning the study that established the basis for these proposed regulations, EPA completed several studies of the ink industry. Review of these studies indicated the need for additional information to profile the ink industry.

To this end, EPA developed a Data Collection Portfolio (DCP) which was reviewed by the National Association of Printing Ink Manufacturers (NAPIM) prior to distribution to 598 possible ink manufacturing sites. Completed DCP forms were returned by 460 operating ink plants.

EPA and its contractors visited ten facilities of different sizes, ages, physical configurations, and locales. Sampling was performed at six of these ink plants.

In addition to the foregoing data sources, supplementary data were obtained from NPDES permit files in EPA regional offices, and contacts with state and municipal pollution control offices. EPA also reviewed over 40 articles, documents and publications in developing its technical and economic analyses. The data gathering effort

solicited all known sources of data and all available pertinent data were used in developing these regulations.

Data for the economic analysis was collected in the DCP; and additional information came from NAPIM. This data undated and supplemented economic studies of the ink industry completed by EPA in 1974 and 1979.

V. Sampling and Analytical Program

As Congress recognized in enacting the Clean Water Act of 1977, the state-of-the-art ability to monitor and detect toxic pollutants is limited. Except for the metals and a small number of organics, many of the toxic pollutants were relatively unknown until only a few years ago, and only on rare occasions has EPA regulated or has industry monitored or even developed methods to monitor for most of these pollutants. As a result, the Agency has not yet promulgated analytical methods for many toxic pollutants under Section 304(h) of the Act. Moreover, state-of-the-art techniques involve the use of highly expensive, sophisticated equipment, with costs ranging as high as $200,000 per unit of equipment.

Faced with these problems, EPA scientists conducted a literature search and initiated a laboratory program to develop analytical protocols. The analytical techniques used in this rulemaking are described in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants,* revised April 1977.

Because Section 304(h) methods were available for most toxic metals, pesticides, cyanide, and phenol, the analytical effort focused on developing methods for sampling and analyses of organic toxic pollutants. The three basic analytical approaches considered by EPA were infra-red spectroscopy, gas chromatography (GC) with multiple detectors, and gas chromatography/mass spectrometry (GC/MS). In selecting among these alternatives, EPA considered their sensitivity, laboratory availability, costs, applicability to diverse waste streams from numerous industries, and potential for implementation within the statutory and court-ordered time constraints of EPA's program. The Agency concluded that infra-red spectroscopy is not sufficiently sensitive or specific for application in water. GC with multiple detectors was rejected because it requires multiple runs, incompatible with program time constraints. Moreover, because this method uses several detectors, each applicable to a narrow range of substances, it might fail to detect certain toxic pollutants. EPA chose GC/MS because it is the only available technique that can identify a wide variety of pollutants in many different waste streams, in the presence of interfering compounds, and within the time constraints of the program. In EPA's judgment, GC/MS and the other analytical methods for toxics used in this rulemaking represent the best state-of-the-art methods for toxic pollutant analyses available when this study began.

EPA has continued to refine its sampling and analytical protocols as the technology has improved. Resource constraints, however, prevent EPA from reworking completed sampling and analyses to keep up with the evolution of analytical methods. As a result, the analtytical techniques used in some rulemakings may differ slightly from those used in other rulemaking efforts. In each case, however, the analytical methods used represent the best state-of-the-art available for a given industry study. One of the goals of EPA's analytical program is the proposal and promulgation of additional Section 304(h) analytical methods for toxic pollutants, scheduled to be done within the next several months.

Before proceeding to analyze ink formulating wastes, EPA concluded that it has to define specific toxic pollutants for analysis. The list of 65 pollutants and classes of pollutants potentially includes thousands of specific pollutants; the expenditure of resources would overwhelm government and private laboratories if analyses were attempted for all of these pollutants. In order to make the task more manageable, EPA selected 129 specific toxic pollutants for study in this rulemaking and other industry rulemakings. the criteria for selection of these 129 pollutants included frequency of occurrence in water, chemical stability and structure, amount of the chemical produced, availability of chemical standards for measurement, and other factors.

EPA ascertained the presence and magnitude of the 129 specific toxic pollutants in ink manufacturing wastewaters in a sampling and analysis program involving six ink plants. The selected plants were repreentative of the manufacturing processes, the prevalent mix of production among plants, and the current treatment technology in the industry. All of the plants selected for sampling were indirect dischargers that used caustic and/or water tank washing operations.

The primary goal of the field sampling program was to produce samples of wastewater from which concentrations of toxic pollutants could be ascertained. Untreated wastewater samples were taken at all six plants. Treated effluent samples were taken at one plant following application of neutralization and settling. EPA also sampled intake water to determine the presence of toxic pollutants prior to contamination by ink manufacturing operations.

The analyses for toxic pollutants were performed according to groups of chemicals and associated analytical schemes. Organic toxic pollutants included volatile (purgable), base-neutral, and acid (extractable) pollutants, and pesticides. Inorganic toxic pollutants included heavy metals and cyanide.

The primary analytical method for the volatiles, base-neutral, and acid organics was gas chromatography with confirmation and quantification of all samples by mass spectrometry (GC/MS). Phenols (total) were analyzed by the 4-aminoantipyrine (4–AAP) method. GC was employed for analysis of pesticides with limited MS confirmation. The Agency analyzed the toxic heavy metals by atomic adsorption spectrometry (AAS), with flame or graphite furnace atomization following appropriate digestion of the sample, and by the inductively coupled argon plasma (ICP) technique. Samples were analyzed for cyanides by a colorimetric method, with sulfide previously removed by distillation. Analyses for conventional pollutants (BOD5, TSS, pH, and Oil and Grease) and various nonconventional pollutants were accomplished using "Methods for Chemical Analysis of Water and Wastes," (EPA 625/6–74–003) and amendments.

VI. Industry Subcategorization

In developing these regulations, the Agency needed to determine whether different effluent limitations and standards were appropriate for different segments of the industry. The Major factors considered in identifying subcategories included: raw materials and products; production methods; size and age; wastewater characteristics; and tub cleaning techniques. The Agency found that tub cleaning techniques were the most significant factor, and divided the industry into two subcategories on this basis. Section IV of the Development Document contains a detailed discussion of the factors considered and the rationale for subcategorization.

The subcategories of the ink formulating industry are:

1. Solvent-Wash (formerly Solvent-Base Solvent-Wash)—applicable to production of ink when an organic solvent is used to rinse the tubs between batches; and

2. Caustic and/or Water-wash—applicable to production of ink when a

caustic solution and/or water are used to rinse the tanks between batches.

VII. Available Wastewater Control and Treatment Technology

A. Status of In-Place Technology

An estimated 237 ink manufacturing plants currently do not discharge process wastewater pollutants. Of these plants, 181 do not generate wastewater at all, 30 plants contract haul wastes and 26 ink plants practice dry tank cleanup methods. Also, 27 plants report partial or complete reuse of wastewater.

The most common methods used by ink plants for treating or pretreating wastewater prior to disposal are gravity separation or settling, and neutralization. Few plants employ physical-chemical treatment or biological treatment and none use wastewater treatment methods such as activated carbon or ultrafiltration.

B. Control Technologies Considered

The control and treatment technologies available for this industry include: *(1) In-Plant Controls.* There are two widely used general strategies for reducing the amount of wastewater that ink plants discharge to the environment. The first is to reduce the amount of wastewater generated, and the second to reuse as much wastewater as possible within plant processes.

(a) Wastewater Reduction. The amount of wastewater generated is influenced by the water pressure used for tub and equipment cleaning, the degree of cleaning required and the use of dry cleaning techniques.

The amount of water required to clean large ink tubs can be reduced by cleaning the tub surfaces with a squeegee prior to rinsing. Small tubs can be partially or completely cleaned with rags. The quantity of wastewater from tub cleaning can be reduced also by the use of high pressure water. There are several available commercial systems, consisting of booster pumps, flow regulators and nozzles, which can supply low volume, high pressure water sprays which will clean tubs as well or better than hand-held hoses using city water pressure.

(b) Wastewater Reuse. Ink plants show considerable variation in their tub cleaning practices and in their willingness or reluctance to reuse wastewater. Of the plants responding to the ink industry DCP, 158 plants indicated use of a water rinse. Of this group, 11 percent usually reuse their wastewater in subsequent batches of ink. There are no differences in reuse practices between small plants and large plants.

(2) Effluent Technologies: There are two technologies available for ink plants which are not able to eliminate the discharge of wastewater through in-plant controls: physical-chemical treatment and contract hauling.

(a) Physical-Chemical Treatment. Physical-chemical (P–C) treatment systems are basically enhancements of gravity settling systems. While not currently used in the ink formulating industry, P–C treatment is commonly used in the paint manufacturing industry, which has many similarities to ink manufacturing. Most plants utilizing P–C systems operate them on a batch basis. The plant's wastewater flow collects in a holding tank until a sufficient quantity warrants treatment. If necessary, the pH is adjusted to an optimum level, a coagulant (often lime, alum, ferric chloride, or iron salts) and/or a coagulant aid (polymer) is added, and the batch is agitated and allowed to settle (from 1 to 48 hours). The supernatant is discharged, and the sludge is generally disposed of by contract hauling.

(b) Contract Hauling. Wastewater which cannot be eliminated or reused through in-plant controls can be stored for removal by a contract hauler. The contract hauler will transport the wastewater and arrange for disposal at a hazardous waste disposal facility.

VIII. BAT Effluent Limitations

The factors considered in assessing best available technology economically achievable (BAT) include the age of equipment and facilities involved, the process employed, process changes, nonwater quality environmental impacts (including energy requirements) and the costs of application of such technology (Section 304(b)(2)(B)). At a minimum, the BAT technology level represents the best economically achievable performance of plants of various ages, sizes, processes, or other shared characteristics. BAT may include process changes or internal controls, even when not common industry practice.

The statutory assessment of BAT "considers" costs, but does not require a balancing of costs against effluent reduction benefits (see *Weyerhaeuser* v. *Costle,* 590 F. 2d 1011 (D.C. Cir. 1978). In developing the proposed BAT, however, EPA has given substantial weight to the reasonableness of costs. The Agency has considered the volume and nature of discharges, the volume and nature of discharges expected after application of BAT, the general environmental effects of the pollutants, and the costs and economic impacts of the required pollution control levels.

Despite this expanded consideration of costs, the primary determinant of BAT is effluent reduction capability. As a result of the Clean Water Act of 1977, the achievement of BAT has become the principal national means of controlling toxic water pollution. Although direct discharges of ink wastewater do not occur at the present time, the Agency is setting BAT limitations which would apply to existing indirect dischargers which might convert to direct discharge. Actual costs and nonwater quality impacts, therefore, do not exist.

EPA considered two options for BAT for the caustic and/or water-wash subcategory of the ink formulating industry. These options (which are described in greater detail in Section VII of the Development Document) are:

(A) Option One—Require effluent limitations based on physical-chemical (P–C) treatment.

This option consists of wastewater coagulation/flocculation using alum, lime, ferric chloride, and/or synthetic polymer, followed by sedimentation. P–C treatment removes many conventional, nonconventional, and toxic pollutants. Based on data from paint industry wastewater, EPA believes that this technology can yield median removals of greater than 90 percent for six toxic pollutants: lead, zinc, butyl phthalate, di(2-ethylhexyl) phthalate, carbon tetrachloride, and tetrachloroethylene. Furthermore, EPA estimates that median removals of twenty other toxic pollutants will be between 50 and 90 percent, and that overall toxic pollutant removal will be 85 percent. The conventional and nonconventional pollutant parameters best removed by P–C treatment are oil and grease (97 percent), total suspended solids (99 percent), and total volatile suspended solids (98 percent). Under this option, hazardous waste generation will be approximately 15 percent of the wastewater generated.

No plants in the ink industry practice direct discharge; and therefore no unemployment, plant closures, or changes in industry production capacity should occur.

(B) Option Two—Require no discharge of process wastewater pollutants based on contract hauling of all wastewater generated. Some ink plants can reuse wastewater in subsequent batches of ink or utilize rinse water as make-up water for caustic solution. Others may use in-plant controls such as high-pressure rinsing to reduce wastewater generation. However, most plants do not produce sufficient volumes of inks to justify installation of high pressure rinses. Any wastewater that is not

incorporated into product or eliminated through water conservation would be stored and disposed of by contract hauling.

Pollutant reduction under Option Two would be 100%, and hazardous waste generation may equal the wastewater generated.

Because no plants in the ink industry presently practice direct discharge, there are no unemployment, plant closures, or changes in industry production associated with this option.

BAT Selection and Decision Criteria: EPA has selected Option Two as the basis for proposed BAT effluent limitations for the caustic and/or waterwash subcategory. The technical and economic analysis of the industry has shown that the application of Option Two can completely eliminate the discharge of toxic pollutants to surface waters without creating unacceptable economic or nonwater quality impacts. Due to the toxic nature of ink manufacturing wastewater, the Agency has determined that the disposal of these wastes to properly designed hazardous waste disposal sites is preferable to discharge to surface waters.

IX. New Source Performance Standards

The basis for new source performance standards (NSPS) under Section 306 of the Act is the best available demonstrated technology. New plants have the opportunity to design the best and most efficient ink manufacturing processes and wastewater treatment technologies, and Congress therefore directed EPA to consider the best demonstrated process changes, in-plant controls, and end-of-pipe treatment technologies which reduce pollution to the maximum extent feasible.

Because the BAT options include all technology elements available available for reduction of pollutants in ink wastewater, the two options considered for NSPS are identical to the options described above under BAT Effluent Limitations for the caustic and/or water-wash subcategory. EPA anticipates no further improvement in technology beyond BAT Option Two in new sources. However, a new plant may reduce hazardous waste generation by incorporating in-plant controls in plant design. Such reductions would lessen the nonwater quality impact of NSPS.

At the present time, 40 percent of all plants in the industry are indirect dischargers; the remaining 60 percent practice no discharge. The Agency expects that the majority of new firms entering the industry will be no dischargers or indirect dischargers. EPA does not expect this option to have significant impacts.

NSPS Selection and Decision Criteria—EPA has selected Option Two as the basis for proposed new source performance standards for the caustic and/or water-wash subcategory for the same reasons discussed under BAT Effluent Limitations.

X. Pretreatment Standards for Existing Sources

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES) , which must be achieved within three years of promulgation. PSES are designed to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of POTW. The Clean Water Act of 1977 adds a new dimension by requiring pretreatment for pollutants, such as heavy metals, that limit POTW sludge management alternatives, including the beneficial use of sludges on agricultural lands. The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based, analogous to the best available technology for removal of toxic pollutants. The general pretreatment regulations (40 CFR Part 403), which served as the framework for these proposed pretreatment regulations for the ink foumulating industry, can be found at 43 FR 27736 (June 26, 1978).

EPA considered two options for PSES in the solvent-wash and caustic and/or water-wash subcategories:

(A) Option One—Require pretreatment standards based on physical-chemical treatment. This option is identical to Option One presented above under BAT Effluent Limitations. P–C treatment would remove approximately 85 percent of toxic pollutants. EPA estimates that this option would remove 4.5 metric tons of toxic pollutants per year from influents to POTW. Hazardous waste generation would be 15 percent of the total wastewater generated.

Of the 460 production plants in the ink industry, the Agency expects 162 to incur additional costs to comply with this option. EPA estimates that total industry investment necessary would be $3.2 million and that annual costs could reach $1.9 million, including interest and depreciation. No unemployment, plant closures or changes in industry production capacity are expected.

(B) Option Two—Require pretreatment standards based on contract hauling of all wastewater generated. In-plant controls such as high pressure washing, dry spill clean-up, and/or reuse of wastewater can reduce the volume of hazardous waste contract hauled at some plants. This option is identical to Option Two presented above under BAT Effluent Limitations. EPA estimates that this option would remove 5.3 metric tons of toxic pollutants per year from influents to POTW.

Of the 460 production plants in the ink formulating industry, EPA expects that 184 would have to incur additional costs to comply with this option. The Agency estimates that total capital investment will be $1.5 million and annual costs may reach $3.0 million including interest and depreciation. No unemployment, plant closures, or changes in industry production capacity are expected.

Selection of Pretreatment Technology and Decision Criteria: EPA has selected Option Two, complete elimination of discharge of pollutants by contract hauling wastes, as the basis for pretreatment standards for existing sources in the solvent-wash subcategory. Not only will this option prevent the discharge of high concentrations of toxic solvents to POTW, but solvents also have an economic value and can either be sold to scavengers or reclaimed on-site and reused. Because this subcategory uses no water in the rinsing of equipment, solvents and off-specification batches make up the entire discharge. EPA rejected Option One because of the toxicity of these wastes and the economic advantage in solvent reclamation.

For the caustic and/or water-wash subcategory, EPA also selected Option Two. The Agency's review of the technical and economic data base has shown that through the application of Option Two, the ink industry can completely eliminate the discharge of toxic pollutants to POTW without creating unacceptable economic or nonwater quality impacts. EPA rejected Option One because it fails to remove toxic pollutants to the level necessary to prevent interference with POTW performance and contamination of sludges. Due to the toxic nature of ink manufacturing wastewater, the Agency has determined that the disposal of these wastes to properly designed hazardous waste disposal sites is preferable to discharge to POTW.

XI. Pretreatment Standards for New Sources

Section 307(c) of the Act requires EPA to promulgate pretreatment standards for new sources (PSNS) at the same time that it promulgates NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate the best available demonstrated

technologies including process changes, in-plant controls, and end-of-pipe treatment technologies, and to use plant site selection to ensure adequate treatment system installation. The pretreatment options for new caustic and/or water-wash ink plants discharging to POTW are the same as those for PSES, presented in the preceding section of this preamble.

A new ink plant which falls into the large plant model category may require additional investments of $0.12 million to comply with the no discharge regulation. This may add 0.6 cents per pound to the price of ink. The Agency does not expect that this will inhibit entry into the industry.

Selection of Pretreatment Technology and Decision Criteria—EPA has selected Option Two as the technology basis for pretreatment standards for new plants in the caustic and/or water-wash subcategory.

XII. Pollutants and Subcategories Not Regulated

While the Settlement Agreement required EPA to regulate the entire ink formulating industry listed under the U.S. Department of Commerce, Bureau of the Census, Standard Industrial Classification (SIC) code number 2893 Paragraph 8(a)(i) of the Agreement authorizes the Administrator to exclude from regulation toxic pollutants or industry subcategories for which equal or more stringent protection is already provided by existing effluent limitations guidelines, new source performance standards, or pretreatment standards.

The solvent-wash subcategory of the Ink Formulating Point Source Category was previously studied by EPA. On July 28, 1975, EPA promulgated BPT, BAT, NSPS, and PSNS regulations setting forth no discharge limitations for this subcategory. See 40 CFR Part 447. Therefore, under Paragraph 8(a)(i) of the Settlement Agreement, EPA has determined that it is unnecessary to establish additional BAT, NSPS, or PSNS the solvent-wash subcategory.

No BPT or BCT limitation is established for any subcategory in the ink industry. The no discharge limitations promulgated or currently proposed for BAT incidentally eliminate the discharge of conventional pollutants. Therefore, BPT or BCT limitations are unnecessary.

XIII. Costs, Effluent Reduction Benefits, and Economic Impact

Executive Order 12044 requires EPA and other agencies to perform Regulatory Analyses of certain regulations. 43 FR 12661 (March 23, 1978). EPA's plan for implementing Executive Order 12044 requires a Regulatory Analysis for major regulations involving annual compliance costs of $100 million or meeting other specified criteria. 44 FR 30988 (May 29, 1979). The proposed regulations for the ink formulating industry do not meet the criteria for performing a formal Regulatory Analysis. Nonetheless, this proposed rulemaking satisfies the formal Regulatory Analysis requirements.

EPA's economic impact assessment is set forth in *Economic Analysis of Proposed Effluent Standards and Limitations for the Ink Manufacturing Industry*, 1979, EPA. This report details the investment and annual costs for the industry as a whole and for individual plants covered by the proposed ink regulations. The report assesses the impact of compliance costs in terms of plant closures, production changes, price changes, employment changes, local community impacts, and balance of trade effects. The analysis differentiates the industry by volume of production. For each segment, EPA developed a model based upon specific financial information. The data underlying the analysis include information obtained from the industry trade association, publicly available economic information, and data from the Agency survey of the industry.

The ink industry consists of approximately 460 manufacturing plants distributed throughout the United States. A relatively large proportion of companies are printing ink manufacturers with branch plants and a distribution system which sells its product to printers, either directly or through jobbers or merchant wholesalers.

EPA estimates that prices will rise no more than 1.0 cents per pound of ink as plants invest to comply with these proposed regulations. The opportunities for higher productivity to offset these increased costs are questionable, principally because of the small scale of production in most commercial printing ink plants. Even if plants must absorb the full costs of compliance, EPA expects that these regulations will have little impact on the level of competition in the industry and that no closures will result from their promulgation.

BAT/PSES

Of the 460 production plants in the ink industry, EPA expects that 184 will incur additional costs to comply with PSES. The Agency estimates that total investment will be approximately $1.5 million and that annual costs may reach $3.0 million (including interest and depreciation). No unemployment, plant closures, or changes in industry production capacity are expected. EPA estimates that PSES will remove 5.3 metric tons of toxic pollutants per year from influents to POTW. Because all plants in the industry are currently indirect dischargers, BAT will have no independent effects unless conversion to direct discharge occurs.

NSPS/PSNS

A new plant which falls into the large plant model category may be expected to incur additional investment requirements of $0.12 million to comply with the no discharge regulation. This may add 0.6 cents per pound to the present price of ink. EPA does not consider this to be a significant barrier to entry.

XVI. Nonwater Quality Aspects of Pollution Control

The elimination or reduction of one form of pollution may aggravate other environmental problems. Therefore, Sections 304(b) and 306 of the Act require EPA to consider the nonwater quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, EPA has considered the effect of these regulations on air pollution, solid waste generation, and energy consumption. This proposal was reviewed by EPA personnel responsible for nonwater quality environmental programs. While it is difficult to balance pollution problems against each other and against energy utilization, EPA is proposing regulations which it believes best serve often competing national goals.

The following are the nonwater quality environmental impacts (including energy requirements) associated with the proposed regulations:

A. Air Pollution—Imposition of BAT, NSPS, PSES, and PSNS will not create any substantial air pollution problems.

B. Solid Waste—EPA estimates that compliance with the proposed PSES regulations will contribute up to an additional 23,000 metric tons (wet basis) per year of solid wastes.

On the other hand, implementation of proposed pretreatment standards will result in POTW sludges having commensurately lesser quantities and concentrations of toxic pollutants. POTW sludges will become more amenable to a wider range of disposal alternatives, possibly including beneficial use on agricultural lands. Moreover, disposal of large quantities of adulterated POTW sludges is significantly more difficult and costly than disposal of smaller quantities of wastes generated at individual plant

sites. Implementation of the recommended in-plant controls will conserve water, recycle wastes back into the product, and recover valuable raw materials.

Regulations proposed by EPA under Section 3001 of the Resource Conservation and Recovery Act (RCRA) list ink wastewater and solid wastes as "hazardous."43 FR 58946, 58959 (Dec. 18, 1978). These wastes, therefore, will be subject to handling, transportation, treatment, storage, and disposal requirements under Sections 3002–3004 of RCRA. EPA's proposed generator standards require generators of ink wastes to meet containerization, labeling, and reporting requirements, and, if they dispose of wastes off-site, to prepare a manifest which will track the movement of the wastes from the generator's premises to a permitted off-site treatment, storage, or disposal facility. See 43 FR 58946, 58969 (Dec. 18, 1978). The proposed transporter regulations would require transporters of ink wastes to comply with the manifest and assure that the wastes are delivered to a permitted facility. See 43 FR 18506 (April 28, 1978). Finally, the proposed treater, storer, and disposer standards would establish technical design and performance standards for ink waste storage facilities, and for landfills, basins, surface impoundments, incinerators, and other facilities where such wastes would be treated or disposed, as well as security, contingency plan, employee training, recordkeeping, reporting, inspection, monitoring and financial liability requirements for all such facilities. See 43 FR 58946, 58982 (Dec. 18, 1978).

XV. Upset and Bypass Provisions

An issue of recurrent concern has been whether industry guidelines should include provisions authorizing noncompliance with effluent limitations during periods of "upset" or "bypass." An upset, sometimes called an "excursion," is unintentional noncompliance occurring for reasons beyond the resonable control of the permittee. It has been argued that an upset provision in EPA's effluent limitations guidelines is necessary because such upsets will inevitably occur due to limitations in even properly operated control equipment. Because technology-based limitations are to require only what technology can achieve, it is claimed that liability for such situations is improper. When confronted with this issue, courts have been divided on the question of whether an explicit upset or excursion exemption is necessary or whether upset or excursion incidents may be handled through EPA's exercise of enforcement discretion. Compare *Marathon Oil Co.* v. *EPA*, 564 F. 2d 1253 (9th Cir. 1977) with *Weyerhaeuser* v. *Costle, supra* and *Corn Refiners Association, et al.* v. *Costle*, No. 78–1069 (8th Cir., April 2, 1979). See also *American Petroleum Institute* v. *EPA*, 540 F. 2d 1023 (10th Cir. 1976); *CPC International, Inc.* v. *Train*, 540 F. 2d 1320 (8th Cir. 1976); *FMC Corp.* v. *Train*, 539 F. 2d973 (4th Cir. 1976).

While an upset is an unintentional episode during which effluent limits are exceeded, a bypass is an act of intentional noncompliance during which waste treatment facilities are circumvented in emergency situations. Bypass privisions have, in the past, been included in NPDES permits.

EPA has determined that both upset and bypass provisions should be included in NPDES permits, and has recently promulgated NPDES regulations which include upset and bypass permit provisions. See 44 FR 32854 (June 7, 1979). The upset provision establishes an upset as an affirmative defense to prosecution for violation of technology-based effluent limitations. The bypass provision authorizes bypassing to prevent loss of life, personal injury, or severe property damage. Because these provisions are set forth in the NPDES regulations, these proposed regulations for the ink formulating industry do not address these issues.

XVI. Variances and Modifications

Upon the promulgation of final regulations, the effluent limitations for the appropriate subcategory must be applied in all federal and state NPDES permits thereafter issued to ink formulation direct dischargers. In addition, the pretreatment limitations are directly applicable to indirect dischargers.

The BAT effluent limitations, however, are subject to EPA's "fundamentally different factors" variance. See *E. I. du Pont de Nemours and Co.* v. *Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co.* v. *Costle, supra*. This variance recognizes factors concerning a particular discharger which are fundamentally different from the factors considered in this rulemaking. Although this variance clause was set forth in EPA's 1973–1976 industry regulations, it now is part of the NPDES regulations and will not be included in the ink formulation or other industry regulations. See the NPDES regulations at 44 FR 32854 (June 7, 1979) for the text and explanation of the "fundamentally different factors" variance.

In addition, BAT limitations for nonconventional pollutants are subject to modifications under Sections 301(c) and 301(g) of the Act. Under Section 301(l) of the Act, these statutory modifications are not applicable to "toxic" pollutants. According to Section 301(j)(1)(B), applications for these modifications must be filed within 270 days after promulgation of final effluent limitations guidelines. See 43 FR 40859 (Sept. 13, 1978).

Pretreatment standards for existing sources are subject to the "fundamentally different factors" variance and credits for pollutants removed by POTW. See 40 CFR §§ 403.7, 403.13; 43 FR 27736 (June 26, 1978). Pretreatment standards for new sources are subject only to the credits provision in 40 CFR § 403.7. New source performance standards are not subject to EPA's "fundamentally different factors" variance or any statutory or regulatory modifications. See *duPont* v. *Train, supra*.

XVII. Relationship to NPDES Permits

The BAT and NSPS limitations in these regulations will be applied to individual ink formulation plants through NPDES permits issued by EPA or approved state agencies, under Section 402 of the Act. The preceding section of this preamble discussed the binding effect of the these regulations on NPDES permits, except to the extent that variances and modifications are expressly authorized. This section describes several other aspects of the interaction of these regulations and NPDES permits.

A matter which has been subject to different judicial views is the scope of NPDES permit proceedings in the absence of effluent limitations guidelines and standards. Under currently applicable EPA regulations, states and EPA Regions issuing NPDES permits prior to promulgation of final ink formulating regulations must include a "re-opener clause," providing for permits to be modified to incorporate "toxics" regulations when they are promulgated. See 43 FR 22159 (May 23, 1978). To avoid cumbersome modification procedures, EPA has adopted a policy of issuing short-term permits, with a view toward issuing long-term permits only after promulgation of these and other BAT regulations. The Agency has published rules designed to encourage states to do the same. See 43 FR 58066 (Dec. 11, 1978). However, in the event that EPA finds it necessary to issue long term permits prior to promulgation of final BAT regulations, EPA and states will follow essentially the same procedures utilized in many cases of initial permit issuance. The appropriate technology levels and limitations will be assessed

by the permit issuer on a case-by-case basis, on consideration of the statutory factors. See *U.S. Steel Corp.* v. *Train,* 556 F. 2d 822, 844, 854 (7th Cir. 1977). In these situations, EPA documents and draft documents (including these proposed regulations and supporting documents) are relevant evidence, but not binding, in NPDES permit proceedings See 44 FR 32854 (June 7, 1979).

One additional topic that warrants discussion is the operation of EPA's NPDES enforcement program, many aspects of which have been considered in developing these regulations. The Agency wishes to emphasize that, although the Clean Water Act is a strict liability statute, the initiation of enforcement proceedings by EPA is discretionary. EPA has exercised and intends to exercise that discretion in a manner which recognizes and promotes good faith compliance efforts and conserves enforcement resources for those who fail to make good faith efforts to comply with the Act.

XVIII. Small Business Administration Financial Assistance

There are two Small Business Administration (SBA) programs that may be important sources of funding for the Ink Formulation Point Source Category. They are the SBA's Economic Injury Loan Program and Pollution Control Financing Guarantees.

The Clean Water Act authorizes the SBA through its Economic Injury Loan Program, to make loans to assist any small business concern in affecting additions to or alterations in equipment, facilities, or methods of operation in order to meet water pollution control requirements under the Act if the concern is likely to suffer a substantial economic injury without such assistance. This program is open to small business firms as defined by the Small Business Administration. Loans can be made either directly by SBA or through a bank using an SBA guarantee. The interest on direct loans depends on the cost of money to the federal government and is currently set at 7⅜ percent. Loan repayment periods may extend up to thirty years depending on the ability of the firm to repay the loan and the useful life of the equipment. SBA loans made through banks are at somewhat higher interest rates. Additional information on SBA loans is provided in Appendix C to this notice.

In addition to the Economic Injury Loan Program, the Small Business Investment Act, as amended by Public Law 94–305, authorizes SBA to guarantee the payments on qualified contracts entered into by eligible small businesses to acquire needed pollution facilities when the financing is provided through taxable and tax-exempt revenue or pollution control bonds. This program is open to all eligible small businesses. Bond financing with SBA's guarantee of the payments makes available long term (20–25 years), low interest (usually 5 to 7 percent) financing to small businesses on the same basis as that available to larger national or international companies. For further details on this progam write to the SBA, Pollution Control Financing Division, Office of Special Guarantees, 1815 North Lynn St., Magazine Bldg., Rosslyn, VA 22209 (703) 235–2900.

XIX. Summary of Public Participation

On February 3, 1979, EPA circulated a draft technical report to a number of interested parties, including the National Association of Printing Ink Manufacturers and member firms, and affected state and municipal authorities. This document did not include recommendations for effluent limitations guidelines, pretreatment standards, or new source performance standards, but rather presented the technical basis for these proposed regulations. A meeting was held in Washington, D.C. on March 14, 1979, for public presentation and discussion of comments on this document. A brief summary of the comments presented at that meeting follows.

1. Comment: One commenter expressed concern that filtration of physical-chemical (P–C) supernatant would be required to "meet the intent of the physical/chemical pretreatment controls" and that dewatering of sludge may be required to reduce sludge volume to 15% of original volume. These costs were not included in the draft technical document.

Response: The option examined for the ink industry was batch physical-chemical treatment as practiced in the paint industry, which has similar wastewater characteristics. Filtration and sludge dewatering are not practiced in the paint industry, and EPA has found no data indicating that they would be required in the ink industry. Therefore, costs for the P–C option do not include filtration of supernatant or sludge dewatering.

2. Comment: Several participants stated that the ink industry should be exempted from regulation because of its low average daily flow.

Response: Although the ink industry total pollutant mass loading (including five tons of toxic pollutants per year) and flow may be small compared to other industries, the high concentrations of toxic pollutants in ink wastewater are very significant. On the basis of its in-depth economic analysis, EPA believes that the resources needed to eliminate this toxic pollution are not excessive.

Comment: One commenter questioned whether the economic impact of RCRA regulations was included in the contract hauling costs.

Response: The Agency developed these proposed regulations in coordination with the EPA Office of Solid Waste (OSW). OSW concurred with the evaluation of contract hauling feasibility and costs. The economic evaluation is based on a contract hauling cost of $0.08 per liter ($0.30 per gallon), which represents a conservative value for 1978 conditions. Moreover, in order to assess the economic impact of increasing contract hauling costs, EPA incrementally increased the contract hauling cost to a maximum of $0.24 per liter ($0.90 per gallon). EPA anticipates no significant economic impact as a result of these regulations up to $0.20 per liter. Above this cost, conomic impacts may result. However, the Agency cannot estimate the exact impact of RCRA until final regulations are promulgated.

XX. Solicitation of Comments

EPA invites and encourages public participation in this rulemaking. The Agency asks that any deficiencies in the record of this proposal be addressed specifically and that suggested revisions or corrections be supported by data.

EPA is particularly interested in receiving additional comments and information on the following issues:

(1) The Agency is reviewing the sampling and analytical methods used to determine the presence and magnitude of toxic pollutants, and solicits comments on the data produced by these methods, and the methods themselves.

(2) In order to provide a more extensive data base for this rulemaking, EPA requests that ink formulation plants voluntarily sample and analyze for toxic, conventional and nonconventional pollutants in their waste streams. At a minimum, samples should be taken from intake water, raw wastewater, and pretreated or final effluent where treatment is in place. Voluntary sampling and analyses must follow the same methods used by EPA; plants which intend to participate in this effort should contact Mr. James R. Berlow at the address listed above for further assistance. Sampling and analysis protocols will be available to plants wishing to participate in this program.

(3) Characterization of the nature and amount of sludges generated by ink formulation plants and the costs of

hazardous waste handling and disposal are important to these regulations and to regulations being developed by EPA's Office of Solid Waste, under authority of the Resource Conservation and Recovery Act (RCRA). The Agency solicits additional data concerning the quantities, pollutant content, and handling and disposal costs for all solid wastes. In addition, EPA requests comment on the capacity of hazardous waste disposal sites to accept the wastes which will be generated by this proposed regulation.

(4) In proposing these regulations, EPA has concluded that the environmental benefits of no discharge regulations outweigh the disadvantages of increased hazardous waste generation and disposal. Comment on this issue is requested.

(5) EPA's economic impact analysis indicates that no plant closings will result from the proposed regulations. Comments on this issue are invited.

(6) EPA has obtained from the industry a substantial data base for the control and treatment technologies which serve as the basis for the proposed regulations. Plants which have not submitted data, or which have compiled more recent data or engineering studies than those already submitted, are requested to forward these data to EPA. These data should be individual data points, not averages or other summary data, and should include flow, production, and all pollutant parameters for which analyses were run. Please submit any qualifications to the data, such as descriptions of facility design, operating procedures, and upset problems during specified periods.

(7) EPA requests that POTW which receive wastewaters from ink formulation plants submit data which would document the occurrence of interference with collection system and treatment plant operations, permit violations, sludge disposal difficulties, or other incidents attributable to the pollutants contained in POTW influent.

(8) The model plants and industry profile underlying the Agency's economic impact analysis are based on industry data from the mid-1980's to late 1977. The Agency requests comments and data on the industry's present and projected condition.

(9) EPA is considering the possibility of promulgating final pretreatment standards which allow discharges. In this event, the Agency may establish numerical pretreatment standards (in mass units) for four toxic metals and six toxic organic compounds. The numerical standards and rationale for these standards are presented in Sections XI and XII of the development document. Comment is requested on these numerical limitations and their technological basis.

Dated: December 14, 1979.

Douglas M. Costle,

Administrator.

Appendix A

Abbreviations, Acronyms and Other Terms Used in this Notice

Act—The Clean Water Act

Agency—The U.S. Environmental Protection Agency

BAT—The best available technology economically achievable, under Section 304(b)(2)(B) of the Act

BCT—The best conventional pollutant control technology, under Section 304(b)(4) of the Act

BMP—Best management practices under Section 304(e) of the Act

BPT—The best practicable control technology currently available, under Section 304(b)(1) of the Act

Clean Water Act—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 *et seq.*), as amended by the Clean Water Act of 1977 (Public Law 95–217)

Direct discharger—A facility which discharges or may discharge pollutants into waters of the United States

Indirect discharger—A facility which discharges or may discharge pollutants into a publicly owned treatment works

NPDES permit—A National Pollutant Discharge Elimination System permit issued under Section 402 of the Act

NSPS—New source performance standards, under Section 306 of the Act

POTW—Publicly owned treatment works

PSES—Pretreatment standards for existing sources of indirect discharges, under Section 307(b) of the Act

PSNS—Pretreatment standards for new sources of indirect discharges, under Section 307 (b) and (c) of the Act

RCRA—Resource Conservation and Recovery Act (PL 94–580) of 1976, Amendments to Solid Waste Disposal Act

Appendix B.—Toxic Pollutants Found in Ink Wastewaters

Organics

Acenaphthene, Benzene, Carbon tetrachloride, Chlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichloroethane, 1,1,1-Trichloroethane, 1,1-Dichloroethane, 1,1,2-Trichloroethane, 2,4,6-Trichlorophenol, Parachlorometacresol, Chloroform, 1,2-Dichlorobenzene, 1,1-Dichloroethylene, 1,2-Trans-dichloroethylene, 1,2-Dichloropropane, 2,4-Dimethylphenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 1,2-Diphenylhydrazine, Ethylbenzene, Fluoranthene, Di(2-Chloroisopropyl) Ether, Methylene Chloride, Trichlorofluoromethane, Chlorodibromomethane, Isophorone, Naphthalene, N-nitrosodiphenylamine, Pentachlorophenol, Phenol, Di(2-ethylhexyl) Phthalate, Butyl Benzyl Phthalate, Di-n-butyl Phthalate, Di-n-octyl Phthalate, Diethyl Phthalate, Dimethyl Phthalate, Chrysene, Anthracene, Fluorene, Phenanthrene, Pyrene, Tetrachloroethylene, Toluene, Trichloroethylene, Dieldrin.

Inorganics

Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc.

Appendix C

Firms in the Ink Formulation Point Source Category may be eligible for direct or indirect SBA loans. For further details on this Federal loan program write or telephone any of the following individuals at EPA Headquarters or in the ten EPA Regional offices:

Coordinator—Mr. Sheldon Sacks, Environmental Protection Agency, Financial Assistance Coordinator, Office of Analysis and Evaluation (WH–586), 401 M Street SW., Washington, D.C. 20460, Telephone: (202) 755–3624.

Region I—Mr. Ted Landry or Gerald DeGaetno, Environmental Protection Agency, J. F. Kennedy Federal Office Building, Room 2203, Boston, Massachusetts 02203, Telephone: (617) 223–5061.

Region II—Mr. Kenneth Eng, Chief, Air and Environmental Applications Section, Environmental Protection Agency, 26 Federal Plaza, New York, New York 10007, Telephone: (212) 264–4711.

Region III—Mr. Chuck Sapp, Environmental Protection Agency, Curtis Building, 3EN40, 6th and Walnut Streets, Philadelphia, Pennsylvania 19106, Telephone: (215) 597–9433.

Region IV—Mr. John Hurlebaus, Environmental Protection Agency, 345 Courtland Street NE., Atlanta, Georgia 30308, Telephone: (404) 881–4793.

Region V—Mr. Chester Marcyn, Contingency, Plan Coordinator, Surveillance and Analysis Branch, Enforcement Division, Environmental Protection Agency, 536

South Clark Street, Chicago, Illinois 60605, AC (213) 353–2316.

Region VI—Ms. Jan Horn, Attorney, Water Enforcement Division, Water Program Branch, Environmental Protection Agency, 1st International Building, 1201 Elm Street, Dallas, Texas 75270, Telephone: (214) 767–2760.

Region VII—Mr. Donald Sandifer, Sanitary Engineer, Water Division, Engineering Branch, Environmental Protection Agency, 324 East 11th Street, Kansas City, Missouri 64106, Telephone: (816) 374–2725.

Region VIII—Mr. Gerald Burke, Sanitary Engineer, Office of Grants, Water Division, Environmental Protection Agency, 1860 Lincoln Street, Denver, Colorado, 80203, Telephone: (303) 837–3961.

Region IX—Mr. Stan Leibowitz or Ray Seid, Permits Branch, Enforcement Division, Environmental Protection Agency, 215 Fremont Street, San Francisco, California 94111, Telephone: (415) 556–3450.

Region X—Mr. Dan Bodien, Special Technical Advisor, Enforcement Division, Environmental Protection Agency, 1200 6th Avenue, Seattle, Washington 98101, Telephone: (206) 442–1270.

Headquarters—Mr. Donnel Nantkes, Legal Counsel, Grants Contracts and General, Administration Division, Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, Telephone: (202) 426–8830.

Interested persons may also contact the Assistant Regional Administrators for Finance and Investment in the Small Business Administration Regional offices for more details on federal loan assistance programs. For further information, write or telephone any of the following individuals:

Region I—Mr. Russell Berry, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 60 Batterymarch, 10th Floor, Boston, Massachusetts 02203, Telephone: (617) 223–3891.

Region II—Mr. John Axiotakis, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 26 Federal Plaza, New York, New York 10007, Telephone: (212) 264–1452.

Region III—Mr. David Malone, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 231 St. Asapas Road, West Lobby, Suite 646, Bala Cynwyd, Pennsylvania 19004, Telephone: (215) 596–5908.

Region IV—Mr. Merritt Scoggins, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 1401 Peachtree Street NE., Atlanta, Georgia 30309, Telephone: (404) 881–2009.

Region V—Mr. Larry Cherry, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 219 South Dearborn Street, Chicago, Illinois 60604, Telephone: (312) 353–4533.

Region VI—Mr. Donald Beaver, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 1720 Regal Row, Suite 230, Dallas, Texas 75202, Telephone: (214) 749–1265.

Region VII—Mr. Richard Whitley, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 911 Walnut Street, 23rd Floor, Kansas City, Missouri 64106, Telephone: (816) 374–3927.

Region VIII—Mr. James Chuculate, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 1405 Curtis Street, Executive Tower Building, 22nd Floor, Denver, Colorado 80202, Telephone: (303) 327–3988.

Region IX—Mr. Charles Hertzberg, Assistant Regional Administrator for Finance and Investment, Small Business Administration, 450 Golden Gate Avenue, San Francisco, California 94102, Telephone: (415) 556–7782.

Region X—Mr. Jack Welles, Regional Administrator for Finance and Investment, Small Business Administration, 710 2d Avenue, Dexter Horton Bldg., 5th Floor, Seattle, Washington 98104, Telephone: (206) 399–5679.

Revision of Part 447 of Chapter 1 of Title 40 is proposed to read as follows:

PART 447—INK FORMULATING INDUSTRY POINT SOURCE CATEGORY

General Provisions

Sec.

447.10 Applicability.
447.11 General definitions.

Subpart A—Solvent-Wash Subcategory

Sec.

447.20 Applicability; description of the solvent-wash subcategory.
447.21 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
447.22 [Reserved]
447.23 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
447.24 New source performance standards (NSPS).
447.25 Pretreatment standards for existing sources (PSES).
47.26 Pretreatment standards for new sources (PSNS).

Subpart B—Caustic and/or Water-Wash Subcategory

Sec.

447.30 Applicability; description of the caustic and/or water-wash subcategory.
447.31 [Reserved]
447.32 [Reserved]
447.33 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
447.34 New source performance standards (NSPS).
447.35 Pretreatment standards for existing sources (PSES).
447.36 Pretreatment standards for new sources (PSNS).

Authority: Sec. 301, 304(b), (c), (e), and (g), 306 (b) and (c), 307 (b) and (c), and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977) (the "Act"); 33 U.S.C. 1311, 1314 (b), (c), (e), and (g), 1316 (b) and (c), 1317 (b) and (c), and 1361; 86 Stat. 816, Pub. L. 92–500; 91 Stat. 1567, Pub. L. 95–217.

General Provisions

§ 447.10 Applicability.

This part applies to any ink formulating plant which discharges or may discharge pollutants to waters of the United States or which introduces or may introduce pollutants into a publicly owned treatment works.

§ 447.11 General definitions.

The definitions set forth in 40 CFR Part 401 apply to this part.

Subpart A—Solvent-Wash Subcategory

§ 447.20 Applicability description of the solvent-wash subcategory.

This subpart applies to discharges to waters of the United States and to introductions of pollutants into publicly owned treatment works from any ink formulating plant which, either exclusively or in addition to other operations, produces solvent-base or oil base inks where equipment cleaning is performed using organic solvents.

§ 447.21 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR §§ 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT): There shall be no discharge of process wastewater pollutants to navigable waters.

§ 447.22 [Reserved]

§ 447.23 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR §§ 125.30–.32, any existing point source

subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT): There shall be no discharge of process wastewater pollutants to navigable waters.

§ 447.24 New source performance standards (NSPS).

Any new point source subject to this subpart must achieve the following new source performance standards (NSPS): There shall be no discharge of process wastewater pollutants to navigable waters.

§ 447.25 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR § 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources (PSES): There shall be no discharge of process wastewater pollutants to a publicly owned treatment works.

§ 447.26 Pretreatment standards for new sources (PSNS).

Any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources (PSNS): There shall be no discharge of process wastewater pollutants to navigable waters.

Subpart B—Caustic and/or Water-Wash Subcategory

§ 447.30 Applicability; description of the caustic and/or water-wash subcategory.

This subpart applies to discharges to waters of the United States and to introductions of pollutants into publicly owned treatment works from any ink formulating plant which, either exclusively or in addition to other operations, produces water-base or solvent-base inks where equipment cleaning is performed using water or caustic solution.

§ 447.31 [Reserved]

§ 447.32 [Reserved]

§ 447.33 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR §§ 125.30–.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT): There shall be no discharge of process wastewater pollutants to navigable waters.

§ 447.34 New source performance standards (NSPS).

Any new point source subject to this subpart must achieve the following new source performance standards (NSPS): There shall be no discharge of process wastewater pollutants to navigable waters.

§ 447.35 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR § 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources (PSES): There shall be no discharge of process wastewater pollutants to a publicly owned treatment works.

§ 447.36 Pretreatment standards for new sources (PSNS).

Any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources (PSNS): There shall be no discharge of process wastewater pollutants to a publicly owned treatment works.

[FR Doc. 80-9 Filed 1-2-80; 8:45 am]

BILLING CODE 6560-01-M